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Catalytic conversion of high-viscosity oil in supercritical water

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Abstract

© SGEM2018. Today, supply of hydrogen in processes of hydrotreating of heavy hydrocarbonic raw materials is one of the main expenses in the course of hydrocracking. Therefore, alternative modernization processes that do not use externally supplied hydrogen are desirable and necessary. This scientific work is devoted to solving the problem associated with the processing of high-viscosity oils and shale hydrocarbons in supercritical water to valuable petrochemical raw materials with a high ratio of hydrogen to carbon. The catalytic activity of magnetite and black coal as catalysts for the upgrading of high-viscosity oil in supercritical water was studied. The experimental part was carried out on a laboratory catalytic installation with an automated reactor system under thermobaric conditions, ensuring the transition of water to the sub-and supercritical condition. For comparative studies of products, chromatography-mass spectroscopy, IR spectroscopy and microscopy were used. In the work, regularities of the composition of final products of the catalytic conversion of high-viscosity oil in supercritical water are revealed, depending on the composition and structure of the pillar agents and the thermodynamic conditions of the experiments.

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Keywords

Black coal, Hydrocarbonic raw materials, Magnetite, Supercritical water

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